

Appl. No. 09/960,530
Reply to Office Action of September 16, 2004

PATENT

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1 1. (Currently Amended) A method method for operating a solid oxide fuel
2 cell battery [(1)], in which an integrity state of the battery is determined by means of
3 measurement of operating parameters and programmed evaluation of the measurement data and
4 the battery is controlled for the purpose of reliable operation in such a manner that the maximum
5 electrical output power is subjected to a limitation which is dependent on the integrity state or an
6 interruption of the operation is initiated, with the integrity state being characterizable by at least
7 two parameters, ~~in particular a parameter pair~~ c_j , d_j , so that from a relationship which contains
8 the parameters an internal electrical resistance (R_i) of the battery can be calculated ~~on the one~~
9 ~~hand~~ and a statement on the quality of the battery can be derived ~~on the other hand~~ wherein the
10 battery comprises a chamber in which reaction gases are burned after passage through the fuel
11 cells; and wherein at least one sensor is used in this chamber in order to monitor the presence of
12 a flame, with a measurement signal being produced in the sensor as a result of physical
13 properties of the flame.

1 2. (Currently Amended) A method method in accordance with claim 1,
2 wherein the physical properties of the flame are characterized in that the battery comprises a
3 chamber [(30)] in which reaction gases (51, 52) are burned after passage through the fuel cells;
4 and [in that] at least one sensor (31) is used in this chamber in order to monitor the presence of a
5 flame, with a measurement signal being produced in the sensor as a result of physical properties
6 of the flame, in particular of a production of heat at the flame temperature or an emission of
7 photons.

1 3. (Currently Amended) A method Method in accordance with claim 1,
2 wherein characterized in that a mathematical relationship (II) exists between the internal

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3 resistance (Ri) and an amount of fuel (QF) which is fed into the battery; and ~~wherein in that~~ the
4 parameters cj, dj enter into this relationship as proportionality factor or as exponent, respectively.

1 4. (Currently Amended) A method Method in accordance with claim 1,
2 wherein the physical properties of the flame are characterized in that current values of the
3 parameter pair cj, dj are determined by means of periodically carried out diagnostic
4 measurements and by carrying out digital computations (IV - X"); and ~~wherein in that~~ as a result
5 of these values the control of the battery is adapted where appropriate, ~~or in that, depending on~~
6 ~~the integrity state, a message is displayed that a replacement of the fuel cells is required.~~

1 5. (Currently Amended) A method Method in accordance with claim 4,
2 wherein characterized in that a table of values of the parameter pair cj, dj is determined on the
3 basis of a collective of batteries ~~(4)~~ having a broad spectrum of different integrity states (j); and
4 ~~in that wherein~~ these values are used in the control instead of the values which are determined by
5 the diagnostic measurements, with a minimum deviation of the results of the diagnostic
6 measurement being aimed for by means of a predetermined criterion (IX - X").

1 6. (Currently Amended) A method Method in accordance with claim 5,
2 wherein characterized in that a request for the interruption of the operation is indicated by the
3 system control ~~(8)~~ in the event that the minimum deviation in accordance with the predetermined
4 criterion (IX - X") does not exist.

1 7. (Currently Amended) A method Method in accordance with claim 2,
2 wherein characterized in that the monitoring of the afterburning is carried out by means of a
3 thermo-generator ~~(31)~~.

1 8. (Currently Amended) A method Method in accordance with claim 2,
2 wherein [characterized in that] the monitoring of the afterburning is carried out by means of a
3 UV probe [(31)] or an ionization measurement.

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1 9. (Currently Amended) A method ~~Method~~ in accordance with claim 2,
2 wherein ~~characterized in that~~ the monitoring of the afterburning is carried out by means of a CO
3 sensor which is arranged in the exhaust gas flow.

1 10. Cancel.

1 11. (New) A method in accordance with claim 4 wherein depending upon the
2 integrity state, a message is displayed that a replacement of the fuel cells is required.